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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,356	03/26/2004	Chen-Chi Martin Ma	MACH 3008/EM	7553

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EXAMINER
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ORTIZ, ANGELA Y

ART UNIT	PAPER NUMBER
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1732

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/809,356

Applicant(s)

MA ET AL.

Examiner

Angela Ortiz

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-20 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☒ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 9, 10, 12-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Butler, USP 6,752,937.

#### Claims 1-2

The cited reference teaches the claimed method of molding a fuel cell bipolar plate (col. 9, lines 67-68) by mixing 60-80 wt% of graphite powder based on the weight the resin (col. 5, lines 45-50), using a temperature range of 80-200°C {=176-392°F} and 500-4000 psi (col. 6, lines 50-52, col. 8, lines 33-40). The graphite powder has a size of 10-80 mesh, wherein less than 10 wt% are larger than 40-mesh, with the remaining having a size of 40-80 mesh (col. 5, lines 15-20).

#### Claims 3-5

The mixture comprises a free radical initiator including perbenzoates, in an amount of 1-10% (see col. 6, lines 15-20 and col. 11, line 68).

Art Unit: 1732

Claims 9, 10, 12-14

The mixture includes shrink control additives, readable on the claims low shrinking agents, in an amount of 5-20% based on the total weight of the additive and the resin system, readable on the weight of the resin (as it is included) – see col. 8, lines 1-24. The mixture also includes rheological agents such as magnesium oxide, readable on tackifiers, in an amount of 1-10%. See col. 6, lines 49-65.

Claims 15-20

The mixture further comprises a solvent, such as styrene monomer, in an amount of 10-35%, by weight. For claims 15-17, see col. 4, lines 51-63. The resin is preferably a vinyl ester resin, has a low molecular weight of 200-5000 (claim 19), epoxy novolac vinyl resin (claims 18, 20), see col. 4, lines 27-50 and col. 10, lines 60-67).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

Art Unit: 1732

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 6-8, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayward, US 2001/0006263 A1 in view of Wilson et al., USP 6,248,467.

The cited primary reference substantially teaches the basic claimed method of molding a bipolar plate comprising the steps of forming a mixture of graphite powder within a resin to form a homogenous mixture, wherein the mixture comprises 10-90wt% of graphite powder with a size of 25-80 mesh. The method further comprises molding the mixture at 350°F (within the 80-200°C claimed range), and 2000 pounds per square inch (psi) in a second mold.

The cited primary reference does not teach the use of vinyl ester resin.

The added secondary reference teaches as conventional the feature of molding a bipolar plate from a mixture of vinyl ester resin and graphite powder. The powder typically has a size of 80-325 mesh. The reference teaches that the cost of vinyl esters is economical and outperforms polyester and epoxies in toughness and corrosion resistance (see col. 3, lines 42-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use vinyl ester resin in view of the added reference, when performing the process set forth in the primary reference, for the economical benefit as well as the increased toughness and corrosion resistance.

Art Unit: 1732

With respect to claims 6-8, note that USP 6,248,467 sets forth as conventional the use of mold release agents added to the resin; these include metal stearates. See col. 4, lines 23-33. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any known amount as desired, within proportion, as such is well within the level of ordinary skill in the art for achieving a mold releasing effect.

With respect to claim 18, see col. 3, lines 40-45 of USP 6,248,467.

Claims 11, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butler, USP 6,752,937.

The cited reference remains as applied above.

The cited reference does not specifically state a low shrinking agent of styrene-monomer-diluted polystyrene resin as claimed, and that the solvent is based on the weight of the vinyl ester resin.

The mixture includes shrink control additives, readable on the claims low shrinking agents, in an amount of 5-20% based on the total weight of the additive and the resin system – see col. 8, lines 1-24. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the claimed resin as such is equivalent to the disclosed additives, and would yield equivalent results. Note that such resins are conventional in the art and obvious to include for their properties.

With respect to the solvent based on the weight of the resin as claimed, such is readable on the phrase “by weight” as disclosed and would have been obvious to one of

Art Unit: 1732

ordinary skill in the art at the time the invention was made because the weight of the resin it is included. See col. 4, lines 60-63.

### ***Conclusion***

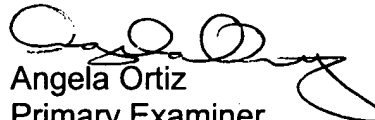
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USP's 5882570; 6217800; 6436315; 2002/0127457; 2003/0044483; 2003/0137073.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela Ortiz whose telephone number is 571-272-1206. The examiner can normally be reached on Monday-Thursday 9:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1732

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Angela Ortiz  
Primary Examiner  
Art Unit 1732

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